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reference to that of the brain. "Science," II, No. 38, 122-126, No. 39, 133, 138. Mar. 19 and 26, 1881.

——10.—The two kinds of vivisection, sentisection and callisection. Medical Record, Aug. 21, 1880, 219. Reprinted in "Nature," Sept. 30, 1880, and in "Science," Oct. 23, 210.

——11.—How to obtain the brain of the cat. "Science," II, No. 41, April 9, 1881, 158-161.

——12.—Criticism of Spitzka's "Notes on the anatomy of the encephalon. etc." "Science," No. 31, p. 48, Jan. 29, 1881. (Embodies a statement of opinion as to the dorsal limits of the diacœlia.)

——13.—On the brain of a cat lacking the corpus callosum. (Presented at the meeting of the Amer. Assoc., 1879, but not yet published.)

Williams, H. S.—A.—The bones, ligaments and muscles of the domestic cat. O., pp. 86; with atlas of 12 folio plates. Copies, reduced one-third, of the outline plates in Straus-Durckheim's A. The text is an explanatory index. New York, 1875.

Addenda.—Concerning the morphical relations and significance of the *conarium* and the *hypophysis*, see the paper by Prof. Owen, read before the British Association in 1881, and reported in "Nature" for Sept. 22, 1881.

In his Report for 1880, as Entomologist of the U. S. Dept. of Agriculture, my colleague, Prof. J. Henry Comstock, expresses (p. 234) his approval of most of the toponomical terms proposed in the present paper (p. 531) and employs them in the descriptions of insects therein contained.

Stated Meeting, November 4, 1881.

Present, 12 members and 7 visitors.

President, Mr. FRALEY, in the Chair.

Mr. Barbour a newly-elected member was introduced to the President, and took his seat.

Letters accepting membership were received from Mr. Charles J. Jones, Jr., dated Augusta, Georgia, October 26; from Mr. Jediaiah Hotchkiss, dated Staunton, Virginia, October 31; from Prof. C. L. Doolittle, dated South Bethlehem, Pennsylvania, October 28, and from Prof. Mansfield Merriman, dated Bethlehem, Pennsylvania, October 25.

Letters of acknowledgment were received from the Physical

Society, Berlin (103-105); the K. L. C. German Academy, Halle (sets of Transactions and Proceedings); the Prague Observatory (XVIII, 107); Offenbach Verein (XVIII, 107); Physical Society, Geneva (102-105); Swiss Society, Bern (102-105); Royal Society, Luxembourg (103-105, 106, 107, List); Royal Society, London (105, 106, List); Victoria Institute (107, 108); Literary and Philosophical Society, Liverpool (106, List).

Letters of envoy were received from the Physical Society, Berlin; Saxon Society, Leipsig; L. C. Academy, Halle; Swiss Society, Bern; Physical Society, Geneva, Musée Guimet, Lyons; Zoological Society, Paris; Geological Survey of India; and Department of the Interior, Washington.

Donations to the Library were received from the Academies at Halle and Brussels; the Com. Geog. Society, Bordeaux; Annales des Mines; Revue Politique; London Royal, Zoological, Geographical, Geological, Meteorological and Asiatic Societies, and Nature; Mr. Sanford Fleming; the Canadian Journal; Dr. Green of Groton; Silliman's Journal; New Jersey Historical Society; Medical News; A. R. Spofford of Baltimore, and the U. S. Department of the Interior.

Dr. Ruschenberger declined by letter his appointment to prepare an obituary notice of the late Dr. B. H. Coates, on account of his engagements.

Dr. Brinton communicated by letter a paper "On the names of the gods in the Kiche myths," the reading of which was postponed to the next meeting.

"The paper is an exegetical study of the celebrated myth of the Kiche tribe of Guatemala, known as *Popol Vuh*, or National Book. The original dates from the latter half of the XVI century, and was first published in Paris by the Abbé Brasseur de Bourbourg in 1861. The facilities I have had for its study have been principally the MSS. grammars and dictionaries of the Guatemalan tongues presented to the Society by Señor Mariano Galvez, President of Guatemala, in 1836. Their use has thrown new and important light on the significance and character of this myth; and, as these MSS. have never been published, I have given numerous full extracts from them. The treasures of the Library of the Society will thus be brought to the knowledge of students."

Dr. Newberry communicated, by letter, of October 27th, a paper "On the Origin and Drainage of the Great Lakes," the reading of which was postponed to the next meeting.*

Dr. E. R. Heath, present by invitation, was then presented by Prof. Cope to the President, and requested to describe the manner and results of his recent exploration of the river Bene, and the hitherto unexplored regions of Bolivia, lying to the south-west of the railroad now being built alongside of the rapids of the Madeira river.

Dr. Heath exhibited a wall map of the north-east course of the Bene river through the great periodically inundated plains, which stretch between the east foot hills of the Andes, and the mountains of Brazil, down to its junction with the Mamora (coming from the south) to form the Madeira.

He exhibited also a collated map of the water system of the Upper Madeira waters, and described the corrections necessary to be made on the published maps of Bolivia.

He described the vast forests of rubber and Brazil nut trees—trees of 200' height when mature—the pampas, scattered over with shrubs like our scrub-oaks—the channel of the Bene, straight as a whole, but tortuous in detail, with alluvial banks, about 30 feet high, over or through which, every year, the inundation spreads over the whole country, leaving here and there dry spots on which the Brazil nut grows—the solitary obstacle to navigation, in the shape of low gneissoid rocks, not far above its junction with the Madeira—and the commerce in gold, silver, copper, tin, fine coffee, cocoa, vanilla, caoutchouc, Brazil nuts, cattle, &c., which will some day flourish, by the natural route of the Bene, Madeira and Amazons, opening up Bolivia to the civilized world.

For 800 miles the Bene is navigable, without interruption, by steamboats drawing 5 feet of water.

Dr. Heath described the various tribes of the country; one, as white as Europeans, and another addicted to cannibalism, and greatly dreaded along the river, on account of their occasional raids for the purpose of securing victims. Neighboring tribes present the most diverse facies. In one district a tribe of small men adjoin a tribe of very tall full-bodied men, and next to these live a tribe of tall, meagre and cadaverous men. All three of these tribes speak different languages. Dr. Heath intends to make a comparative study of his copious linguistic notes.

He exhibited several sheets on which were his drawings of some of the very numerous symbols, or picture writing, which have been cut, to a depth of about an inch, probably by the architectural race of Cuzco and late Titicaca, on all the rocks in and alongside of the river channels, in the district around the great forks of the Madeira. He believed these inscrip-

* This paper will be printed in Vol. xx, No. 111.

tions to relate to the navigation of the river, because of their situations above, below or at the water level, during the various stages of low, middle or high water. Wherever they occurred at dangerous points, he noticed that duplicates were cut so as to face both descending and ascending boats, and the relation of certain marks to safe low water at such and such a point was evident.

It is probable then that the Bene was used in the pre-Spanish age by the race which has left its noble monuments not only on the plateau between the two Andean ranges, but in the ravines by which the head waters and branches of the Madre de Dios and Bene descend into the plain. He could not find, nor hear of, any architectural remains on the plain itself; but he was informed that a "fort" stood on an island in a lake which occupies part of the triangle between the Bene on the northwest and the Mamora on the east.

The plain itself is astonishingly level, the upper reaches of the Bene being only 600 or 700 feet above sea level. [In giving his own exact determination from observations with the mercurial barometer (and supplementary aneroids) extended through three years at El Paz, he remarked on the falsity of former determinations made during transient stops in the country; one well known point being put variously from 170 feet *below*, to 1700 feet *above* tide. This he explained was due to the fact that while the mercurial column is not subject to ordinary fluctuations, and seems for weeks at a time to be quite or almost stationary, there is really a steady cyclical rise for six months, and a corresponding steady fall for the other six months of each year, and this must be taken as the basis of all meteorological and hypsometrical investigations].

Dr. Heath then described in a general way the zoölogical features of the region; the abundance of (harmless) alligators in the rivers; the absence of snakes from the forest plain of inundation, and their presence along the margin of the dry districts; the wasp-like severity of the bite of the ticks in the forests; the irritation produced by the abundance of parasitic insects on the pampas; the incredible abundance of bats in the houses, and their thirst for animal and human blood; the numerous species of monkeys; the large size of the cattle of the country south of the Bolivian (east and west) divide; the change in the voices of birds from harsh in the mountain regions to melodious on the plain; the anvil bird (tree toad?); the organ bird with its diatonic scale of eight ascending notes; the change of the plumage of paroquets from brilliant varied hues in the northern districts, to a general pale green in the southern; the abundance of struthious birds, and the incredible quantity of ant hills in the dry country.

After various questions asked by the members and visitors present, and answered by Dr. Heath, it was, on motion

Resolved, That the thanks of the Society be tendered to Dr. Heath for his very interesting and important communication.

Prof. Chase then made a short communication, placing data on the blackboard, to support a further enlargement of the range of applications of his photodynamic theory to natural phenomena;—and the meeting was adjourned.

Stated Meeting, November 18, 1881.

Present, 11 members.

President, Mr. FRALEY, in the Chair.

Mr. Sharpless accepted membership by letter, dated West Chester, October 29, 1881.

The Cincinnati Observatory acknowledged receipt of Proceedings No. 108.

The Chapultepec Observatory of Mexico requesting exchanges, was placed on the list of correspondents to receive the Proceedings regularly.

Donations for the Library were received from the Royal Society of Tasmania; the Geological Survey of India; Imperial Academy at St. Petersburg; German Geological Society and Society of Physics, Berlin; Natural Science Union, Bremen; Neues Lausitzisches Magazin, Görlitz; Royal Saxon Society, Fürstliche Jablonowskischen Gesellschaft, and Zoologischer Anzeiger, Leipzig; Royal Grand Ducal Institute, Luxembourg; Society of Physics, Geneva; Vaudoise Society, Lausanne; Swiss Society; Anthropological Society, Zoological Society, and Revue Politique, Paris; Revista Euskara, Pamplona; Nature, London; Royal Irish Academy, Dublin; Essex Institute, Salem; Boston Natural History Society; Museum of Comparative Zoology, Cambridge; Mr. Aug. R. Grote, Buffalo; Pharmaceutical Association, Historical Society, Franklin Institute, and the Editor of the American News, Philadelphia; Department of the Interior, and W. J. Hoffman, M. D., Washington; Astronomical Observatory of Chapultepec; Geographical and Statistical Society; Editors of